CDC Influenza Division: H3N2v Key Points

Friday, August 2, 2013

H3N2v Case in Illinois

- The state of Illinois has reported one human infection with H3N2 variant virus (H3N2v).
- The patient reportedly attended a county fair and had exposure to swine.
- The state has issued a press release which is available at http://www.idph.state.il.us/public/press13/8.1.13 State http://www.idph.state.il.us/public/press13/8.1.13 Attrest htt
- A sample of the virus is being sent to CDC for additional testing.
- This is the first H3N2v case reported for Illinois for 2013. Four cases in Illinois were reported in 2012.
- This brings the total number of H3N2v cases reported in the United States this year to 15 (Illinois [1], Ohio [1], Indiana [13]).
- More information about H3N2v, including CDC recommendations for treatment of suspect or confirmed H3N2v infection is available at <u>http://www.cdc.gov/flu/swineflu/h3n2vcases.htm</u>.

H3N2v Background

- Influenza viruses that normally circulate in pigs are called "variant" viruses when they are found in people.
- Influenza A H3N2 variant viruses with the matrix (M) gene from the 2009 H1N1 pandemic virus were first detected in people in July 2011.
- The viruses were first identified in U.S. pigs in 2010.
- In 2011, 12 cases of H3N2v infection were detected in the United States.
- In 2012, 309 cases of H3N2v infection across 12 states were detected in the United States.
- Most of these infections were associated with prolonged exposure to pigs at agricultural fairs.
- Illness associated with H3N2v infection in 2011 and 2012 was mostly mild with symptoms similar to those of seasonal flu.
- However, serious illness, resulting in hospitalization and death, has occurred with H3N2v infections too.
- In 2012, 16 people were hospitalized with H3N2v, including one person who died.
- Most of the people who were hospitalized and the person who died had underlying conditions that would put them at higher risk of developing serious flu-related complications.
- Limited human-to-human spread of this virus has been detected in the past as well, but no sustained community spread of H3N2v has been identified at this time.
- Studies of U.S. blood samples show that much of the U.S. population has some immunity against this virus (see <u>H3N2v Serology</u> below).

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- Fair settings can magnify the risk of influenza spreading among pigs and between pigs and people.
- Pigs from many farms come in close contact with each other and with people at fairs, increasing the risk of exposure to pigs that may be infected with swine influenza viruses.
- While some pigs show symptoms when they are infected with swine influenza (like coughing and sneezing), it's possible that a pig may be infected and not show any symptoms (the pig may appear well.)
- There is evidence, however, that asymptomatic pigs (no symptoms) may still spread swine flu viruses.
- Influenza viruses are thought to spread from a pig to a person in the same way that human flu viruses spread; mainly through droplets produced by coughing and sneezing.
- To help reduce the risk of serious illness posed by agricultural fairs where swine are being exhibited, CDC recommends that people with high risk conditions stay away from pigs at fairs (and their environments, i.e. swine barns) this year.
- In addition, high risk people who develop flu-like illness should contact their health care provider. If you have been to a fair or had other possible contact with pigs, tell your health care provider.
- As always, people at high risk of flu complications should get antiviral treatment as quickly as possible if they have influenza, including H3N2v.
- High risk people include children younger than 5 years, people 65 and older, people with underlying health conditions like asthma, diabetes and heart disease and pregnant women. A full list of high risk conditions is available at <u>http://www.cdc.gov/flu/about/disease/high_risk.htm</u>.
- More information about H3N2v, including CDC recommendations for treatment of suspect or confirmed H3N2v infection is available at <u>http://www.cdc.gov/flu/swineflu/h3n2vcases.htm</u>.

H3N2v Serology

- Studies from three different countries looking at the existing levels of antibodies against H3N2v in the U.S. populations suggest that even if the virus were to gain the ability to spread easily from person to person, sustained transmission in the community would likely to be limited because large parts of the U.S. population have some existing immunity against this virus.
- Children younger than about 10 years have little to no cross-reactive antibodies against H3N2v at levels considered to be protective for influenza, and are therefore would be more likely to suffer from higher H3N2v infection rates in the event that the virus becomes easily transmissible.
 - This is likely because children this age have not been exposed to human H3N2 viruses that closely resemble the current H3N2v viruses.
 - Children and adolescents had increasing levels of cross-reactive antibodies compared with younger children and overall, over half of the people tested between the ages of 10-40 years had cross-reactive antibodies against H3N2v at levels considered to be protective for influenza.

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- This is likely a result of prior exposure to human H3N2 viruses that circulated in the mid-1990s; in this time-period, the seasonal H3N2 viruses had hemagglutinin proteins, the major surface antigen of influenza viruses that were similar to those of the current circulating strain of H3N2v.
- Protective levels of cross-reactive antibodies also are evident in people older than 40 years, though some studies show only low levels. People 65 and older also have some level of pre-existing antibodies to H3N2v viruses and therefore would be less likely to be infected with H3N2v; though they might still be at a higher risk of experiencing severe complications such as hospitalization and death, if they were to become infected.
 - This was the case during the 2009 H1N1 pandemic. Infection rates were lower in older people but, once infected, people in that group still were at higher risk of serious complications resulting from their illness.
- These serological results suggest that children would be more likely to be infected with H3N2v, while adults would be less likely to be infected because of existing immunity among some adults.
- The existing levels of immunity against H3N2v in segments of the population may be sufficient to limit to the pandemic potential of these viruses in their current form.
- CDC is continuing to watch H3N2v viruses closely for changes in the virus, transmission patterns, and severity of disease.

Sources

- Antibodies cross-reactive to influenza A (H3N2) variant virus and impact of the 2010-11 seasonal influenza vaccine on cross-reactive antibodies-United States. MMWR 2012;61(14):237-241.
- <u>Skowronski DM, Moser F, Janjua N, et al. H3N2v and Other Influenza Epidemic Risk</u> <u>Based on Age-Specific Estimates of Sero-Protection and Contact Network Interactions.</u> <u>PLOS One 2013; 8(1): e54015. doi:10.1371/journal.pone.0054015.</u>
- <u>Waalen K, Kilander A, Dudman S, et al. Age-dependent prevalence of antibodies cross-reactive to the influenza A (H3N2) variant virus in sera collected in Norway in 2011.</u>
 <u>Euro Surveillance 2012, 17(19): 1-5.</u>